THE RECOVERY KERNEL

[illegible]

ΔFosB

[illegible]

[illegible] - [illegible]

⚠ [illegible]

[illegible] **192** [illegible] **09 756 276 433** [illegible]

[illegible]

[illegible] ΔFosB [illegible] (-[illegible]) DNA [illegible] epigenetic [illegible]

[illegible] ΔFosB [illegible] -[illegible] ármaz [illegible]

[illegible]

[illegible] Recovery Kernel [illegible]

- [illegible] — [illegible] (ΔFosB [illegible])
- [illegible] observational [illegible]
- [illegible] - [illegible]

- AUTHOR/SYSTEM EXPERIENCE — □□ framework □□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□
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1. ΔFosB □□□□□□□□□□□—□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

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ΔFosB □□□ FOSB □□□□□ □□ transcription factor □□□□□ □□□□□ □□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ nucleus accumbens□ dorsal striatum □□□□□ hippocampal dentate gyrus □□□□□□□□ □□□□□□□□□□ □□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ biochemical □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

- splice □□□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□ □□□□□□□□□□□□□□□□□□□□□ signaling cascade □□□□□ (dopamine D1 receptor activation□ Activin/ALK4 pathway □□□□□ SMAD3–PCBP1 protein complex □□□□□□□□□□□□□) □□□□□□□□□□□□□□□□□□□□ □□□□ cascade □□□ FOSB pre-mRNA □□□ □□□□□□□□□□ splice □□□□□□□□□□□□□□□ □□□□□□□□□□□ splice □□□□ □□□□□□ □□□□□□□□□□□□ ΔFosB protein □□□ □□□□□□□ FosB protein □□□ □□□□□□□□□□□□□ □□□□□□□□□□□□ C-terminal □□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□ ΔFosB □□□ □□□ protein □□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□
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Full-length FosB	~50 kDa	C-□□□□□ degradation □□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□	C-□□□□□ degradation ση □□□□□□□□□ □□□□□□□□□□□□□ ubiquitin-proteasome □□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□	□□□□ - □□□□□□□□□
□□□□□□□□□□□□□□□□ □□□ ΔFosB	~33 kDa	exon-4/intron-4 □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ C-□□□□□□□□□□□□ degradation σηματο □□□□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□ Ser27 □□□ □□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□	□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ N-□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□	□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□
Phosphorylated	~35–37	Casein Kinase 2 (CK2) □□□ Ser27	□□□□□□□□□□□□□□□□□□□□□□□	□□□□□□□□□□□□□□□

[illegible]	[illegible] ([illegible])	[illegible]	[illegible]	[illegible]
("stable") ΔFosB	kDa	[illegible]	(proteasomal) [illegible] (phosphorylated) [illegible]	[illegible] — [illegible] ([illegible])

[illegible] ΔFosB [illegible]

2. ΔFosB [illegible] - [illegible]

"[illegible]" [illegible] (dopaminergic) [illegible] ΔFosB [illegible]

[illegible]/[illegible]	ΔFosB [illegible]	[illegible]	[illegible]
[illegible]	[illegible] GABA/glutamate [illegible] dopamine [illegible]	[illegible] ([illegible]/[illegible] [illegible])	[illegible] ([illegible])
[illegible]	[illegible] ([illegible])	[illegible]	[illegible] ([illegible])
[illegible]	[illegible]	[illegible] — [illegible]	[illegible] ([illegible])

[illegible]/[illegible]	ΔFosB [illegible]	[illegible]	[illegible]
[illegible] (Methamphetamine)	DAT/NET [illegible] — [illegible]	[illegible]	[illegible] ([illegible])
MDMA	[illegible] (serotonin) [illegible] (dopamine) [illegible]	[illegible] ([illegible] otoxicity [illegible])	[illegible]
[illegible]	[illegible] ([illegible]-[illegible]) [illegible]	[illegible] Frequent [illegible]	[illegible] ([illegible])
[illegible] / [illegible] prescriptions [illegible]	Mu-opioid receptor [illegible] VTA dopamine [illegible]	Moderate–High	[illegible] ([illegible])
[illegible] (Fentanyl)	[illegible]	[illegible]	[illegible]
[illegible]	GABA-A [illegible]; [illegible]	[illegible] - [illegible]	[illegible]
[illegible] (THC)	CB1 [illegible] VTA [illegible]	[illegible] - [illegible]	[illegible]
[illegible]	NMDA [illegible]; [illegible]	[illegible] - [illegible]	[illegible]
GHB	GABA-B [illegible]; [illegible]	[illegible] - [illegible]	[illegible]
Kratom	[illegible] (mu-opioid)	[illegible] - [illegible] ([illegible])	[illegible]

[illegible]/[illegible]	**ΔFosB** [illegible]	[illegible]	[illegible]
	[illegible]		
Mephedrone (4-MMC)	DAT/NET/SERT [illegible]-[illegible]	[illegible]—[illegible]	[illegible]
Methedrone (bk-PMMA / 4-MeO-methcathinone)	[illegible] mephedrone [illegible] SERT [illegible] DAT [illegible]	[illegible] — mephedrone [illegible]	AUTHOR/SYSTEM EXPERIENCE — [illegible]
Gambling / gaming / [illegible] loops [illegible]	[illegible] ([illegible]) [illegible]	[illegible]	[illegible] ([illegible])
[illegible]	[illegible] accumbens ΔFosB [illegible]	[illegible]	[illegible]

Methadrone [illegible] ΔFosB [illegible] cathinone [illegible]

3. [illegible] - [illegible]

ΔFosB [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] ΔFosB [illegible]	[illegible]	[illegible] ([illegible])
[illegible]	[illegible] CK2-[illegible] degron [illegible] ΔFosB [illegible]	[illegible]	[illegible] ([illegible])
[illegible]	[illegible]	[illegible]-[illegible] [illegible]; [illegible]/[illegible] [illegible]	([illegible]) [illegible] ([illegible]) [illegible]
mRNA [illegible]	FOSB [illegible]	[illegible]-[illegible] [illegible]	[illegible] ([illegible])
[illegible]	[illegible] ΔFosB [illegible] transcription [illegible] nucleus accumbens [illegible] striatum [illegible]	[illegible]	[illegible] ([illegible])
[illegible] / [illegible]	[illegible] ([illegible]) [illegible]	[illegible] ΔFosB [illegible]	[illegible]

[illegible]: ΔFosB [illegible]—[illegible]

4. [illegible]

[illegible] ([illegible])

ΔFosB [illegible] ΔFosB [illegible]

- [illegible] (c-fos [illegible]) ΔFosB [illegible] promoter [illegible] AP-1 [illegible] Histone Deacetylase 1 (HDAC1) [illegible] HDAC1 [illegible] histone [illegible] (H3K9) [illegible] DNA [illegible] heterochromatin [illegible] ΔFosB [illegible]
- [illegible] CDK5 [illegible] AMPA [illegible] GluA2 (GRIA2) [illegible] ARC [illegible] ΔFosB [illegible] SWI/SNF [illegible] BRG1 [illegible] BRG1 [illegible]

[illegible] "[illegible]" [illegible] "[illegible]" [illegible]

5. [illegible] — [illegible]

[illegible] ΔFosB [illegible] "[illegible]" [illegible] ΔFosB [illegible] ΔFosB [illegible]/GABA [illegible]

[illegible] — ΔFosB [illegible]

[illegible] "[illegible]" [illegible] "[illegible]" [illegible]

[illegible]	[illegible]	**ΔFosB [illegible]**	[illegible]
[illegible] ([illegible] D2 [illegible]: [illegible])	[illegible] D2 [illegible]	[illegible] ΔFosB-[illegible] AP-1 [illegible]—[illegible] (tardive dyskinesia) [illegible]	[illegible] ([illegible])
[illegible] ([illegible])	[illegible] (Section 2) [illegible] DAT/NET [illegible]	[illegible] ([illegible]) [illegible]	[illegible] - [illegible]
[illegible] érapie (methadone, buprenorphine)	[illegible] mu-opioid receptor ([illegible])	"Stabilizer" [illegible] "[illegible]" [illegible] "[illegible]" [illegible] "[illegible]" [illegible] OAT (Opioid Agonist Therapy) [illegible] "[illegible]" [illegible]	[illegible]
[illegible] ([illegible])	GABA-A [illegible]-[illegible]	[illegible]—[illegible] GABA-A [illegible]/[illegible] ΔFosB [illegible]	[illegible]
SSRIs / SNRIs	[illegible] - [illegible]/[illegible]	[illegible] ΔFosB [illegible]—[illegible] hippocampus [illegible] frontal cortex [illegible] nucleus accumbens [illegible]	[illegible] ([illegible]); [illegible] ([illegible]

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P5P (Pyridoxal-5'-Phosphate — □□□□□□□ B6 □ □□□□□□□□□□□□□□□□□□ □□□□□□□□)	AADC (L-DOPA □□□ dopamine □□□□□□□□□□□ 5-HTP □□□ serotonin □□□□□ □□□□□□□□□□□□□ □□□) □□□□□ glutamate decarboxylase (GABA □□□□□□□□□□□□□□□) □□□□□□□□□ □□□□□□□□□ □□□□□□□□□□□□□ □□□□□□□□□□□□ B6 □□□□□□□□□□ □□□□□□□□ dopamine □□□□□ GABA □□□□□□□□ □□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□ □□□□□ □□□□□□□□	□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ D1/PKA/CREB □□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□ □□□□□□□□□□□□□□□□□ FOSB transcription □□□ □□□□□□□□□□□□□□□□□□ (□□□□□□□ □□ □□□□□ □) - □□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ [EMERGING, □□□□□□□□□□□□□□□□□□□□□□]
R5P (Riboflavin-5'-Phosphate — □ ενεργ □□□ B2 / FMN)	□□□□□□□□□□□□□□□□ (cofactor) □□□ flavoprotein enzyme □□□□□□□□□ □□□□□□□□□ □□□□□ MTHFR (C677T □□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□□) □□□□□ MAOA □□□□ □□□□□□□□ □□□□□□□□□□□□□□ C677T □□□□□□□□	ΔFosB □□□□□ □□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□ - riboflavin □□□□□□□□□□□□□ MTHFR □□□□□ MAOA □ □□□□□□□□□□□□□□□□□□□□□□□ □□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□□

[illegible]	[illegible]	ΔFosB [illegible]
	[illegible] enzyme [illegible] FAD-dependent [illegible]	ΔFosB [illegible] ([illegible])[illegible] [[illegible]]
[illegible]	[illegible] ([illegible] NMDA [illegible]) [illegible] NMDA [illegible]-[illegible] CaMKII [illegible] tyw[illegible]	CaMKII [illegible] CK2 [illegible] CK2 [illegible] ΔFosB [illegible] Ser27 [illegible] phosphorylation [illegible] CK2 [illegible] calcium [illegible] ΔFosB [illegible] [[illegible]]

[illegible] - [illegible] ΔFosB [illegible] (dopamine)[illegible] GABA [illegible] (methylation) [illegible] (enzyme) [illegible]

[illegible]. [illegible] - [illegible]

ΔFosB [illegible]

[illegible] — FOSB [illegible]

[illegible] (nucleus accumbens) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
FOSB Ser27Ala (S27A)	[illegible] CK2 [illegible]	[illegible] ΔFosB [illegible]	[illegible] ([illegible])
FOSB Ser27Glu (S27E) —	[illegible]	[illegible] CK2 [illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
phosphomimetic	[illegible]	[illegible]	([illegible])
FOSB exon-4/intron-4 splice-site variants.	PCBP1/SMAD3 [illegible] splicing [illegible]	Degron-[illegible] FosB [illegible] ΔFosB [illegible]	[illegible] ([illegible])

[illegible] — [illegible]

[illegible] ΔFosB [illegible]-[illegible] ΔFosB [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
CSNK2A1 / CSNK2B (CK2 catalytic and regulatory subunits)	ΔFosB [illegible] Ser27 [illegible] (phosphorylate) [illegible] kinase [illegible].	CK2 [illegible] ΔFosB [illegible]	[illegible] ([illegible])
PCBP1 / SMAD3	[illegible] ΔFosB [illegible] splicing [illegible]	[illegible] transcript [illegible] FosB [illegible] ΔFosB [illegible]	[illegible] ([illegible])
ACVR1B (ALK4 receptor)	SMAD3/PCBP1 [illegible] (receptor) [illegible] D1 [illegible] (activation) [illegible]	[illegible] ΔFosB [illegible] splicing [illegible]	[illegible] ([illegible])

[illegible] — [illegible] **Smyth** [illegible]

[illegible] ΔFosB [illegible]

[illegible] [illegible] "[illegible] [illegible]" [illegible] COLUMN [illegible] [illegible] [illegible] [illegible]

[illegible] / [illegible] [illegible]	[illegible]	**ΔFosB** [illegible] [illegible] [illegible] [illegible]	[illegible] — [illegible] [illegible]
DRD1 ([illegible] D1 [illegible]) [illegible] [illegible]	D1 signaling [illegible] PKA/CREB transcriptional cascade [illegible] [illegible] [illegible] FOSB transcription [illegible] [illegible]	[illegible] [illegible] [illegible] transcriptional [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible] [illegible]
CHRNB2 rs2072661	[illegible] [illegible] 3' UTR [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible]	[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
DBH rs1541333	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]-[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]	[illegible]/[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible]	[illegible] [illegible] - [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible]

[illegible] [illegible] — [illegible] [illegible] [illegible] (The Standard Commercial Gene Panel)

[illegible] [illegible] [illegible] [illegible] ONS [illegible] DNA [illegible] (23andMe-style raw data [illegible] Recovery Kernel [illegible] [illegible] [illegible] panel) [illegible] [illegible] [illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]	[illegible]	ΔFosB [illegible] dispersal [illegible]
COMT	[illegible]/[illegible] Val/Val = [illegible]; Met/Met = [illegible]	[illegible] [[illegible]/[illegible]]
MTHFR	[illegible]	ΔFosB [illegible] [[illegible]]
OPRM1 (A118G)	[illegible]-[illegible]	[illegible] ΔFosB [illegible] [EMERGING]
GABRA2	GABA-A [illegible] (receptor subunit) [illegible]	[illegible] [EMERGING]
FAAH (C385A)	Anandamide [illegible] A-allele [illegible] endocannabinoid [illegible]	[illegible] [EMERGING]
MAOA	[illegible]	[illegible] [[illegible]/[illegible]]
SLC6A4 (5-HTTLPR)	[illegible] (serotonin transporter gene) [illegible]	[illegible] ΔFosB [illegible] [[illegible]]
ALDH2	[illegible]	[illegible] Drinking [illegible] ΔFosB [illegible] [AUTHOR/SYSTEM EXPERIENCE[illegible]]
CYP2D6, CYP3A4, CYP2C19, CYP1A2, CYP2C9, CYP2B6	[illegible]	[illegible] ΔFosB [illegible] [[illegible]/[illegible]]
HNMT	[illegible]	ΔFosB [illegible] [[illegible]]

[illegible] ΔFosB [illegible] FOSB [illegible] Tier 2 modifiers (CK2, PCBP1, SMAD3, ACVR1B) [illegible]

[illegible] ΔFosB [illegible] τ[illegible]

DNA [illegible] - [illegible]

[illegible] (SNP [illegible])

[illegible] (23andMe-style reports [illegible]) [illegible] FOSB [illegible] Engineered Tier 1 mutations [illegible]

[illegible] (WGBS)

[EMERGING] ([illegible])

WGBS [illegible] DNA [illegible] epigenetic marking [illegible] DNA methylation [illegible] "WGBS 30x" [illegible] sequencing [illegible] (30 [illegible]) [illegible] methylation [illegible] Sequencing.com [illegible] WGBS-30x [illegible] genome-wide methylation [illegible] core lab [illegible]

methylation patterns [illegible] "epigenetic clock" [illegible] ([illegible] DNA [illegible]), [illegible] methylation [illegible]

[illegible] biomarker [illegible] biomarker [illegible] ΔFosB-specific chromatin [illegible] salivary [illegible] Section 4-[illegible] HDAC1/BRG1 remodeling [illegible] nucleus accumbens neurons [illegible] neurons [illegible] WGBS (Whole Genome Bisulfite Sequencing) [illegible] genome-wide methylation data [illegible] ΔFosB [illegible]

WGBS (Whole Genome Bisulfite Sequencing) [illegible] biological [illegible]

[illegible] "ΔFosB [illegible]" [illegible]

8. [illegible]

[illegible]

[illegible] Recovery Kernel [illegible]

- [illegible] (Convergent induction) [illegible] ΔFosB [illegible] (nucleus accumbens) [illegible] (dopamine) [illegible] (receptors) [illegible] (DAT blockade, mu-opioid activation, GABA-A potentiation [illegible]) [illegible] ΔFosB [illegible] ΔFosB [illegible]
- [illegible] ΔFosB [illegible] ([illegible]) [illegible]
- [illegible] ΔFosB-[illegible]

[illegible] Recovery Kernel [illegible] ([illegible]) [illegible]

[illegible] [illegible] - [illegible] [illegible] [illegible] ([illegible] [illegible] [illegible])

"Chemsex" [illegible] - [illegible] methamphetamine[illegible] mephedrone ("cat") [illegible] cathinone [illegible] GHB/GBL [illegible] [illegible] [illegible] MDMA [illegible] ketamine [illegible]

[illegible]	ΔFosB [illegible] ([illegible] [illegible])	[illegible] [illegible]
[illegible] (Methamphetamine)	[illegible]	DAT/NET [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] απελευθέρωση [illegible] [illegible] [illegible] [illegible]
Mephedrone / cathinones ("cat")	[illegible]	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
GHB / GBL	[illegible] - [illegible]	A ΔFosB [illegible] [illegible] [illegible]—[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] ΔFosB [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

- [illegible] [illegible] ([illegible] [illegible]) — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] **ΔFosB** [illegible] [illegible] [illegible] [illegible] **(Pitchers et al., 2010,** [illegible] **ΔFosB** [illegible] [illegible] [illegible] [illegible] [illegible]**)** [illegible] [illegible] [illegible] **nucleus accumbens, VTA** [illegible] **prefrontal cortex** [illegible] **ΔFosB** [illegible]

- [illegible]

GHB/GBL [illegible] **ΔFosB** [illegible] **GABA** [illegible] **delirium (**[illegible]**)**[illegible] **seizures (**[illegible]**)** [illegible] **GHB/GBL** [illegible] **supervision (supervision)**[illegible]وقف[illegible]

[illegible] GHB/GBL [illegible] ΔFosB [illegible]

[illegible]. [illegible] "[illegible]" [illegible] [illegible] [illegible] [illegible]

[illegible]—"[illegible]"[illegible] "[illegible]"[illegible] "[illegible]"—[illegible]

[[illegible]] ([illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]—[illegible] [illegible] [illegible] [illegible]—[illegible] [illegible])

[illegible] ΔFosB [illegible] Section 4 [illegible] (c-fos [illegible] HDAC1 [illegible] CDK5/GluA2/ARC [illegible] BRG1 [illegible]) [illegible] (dendritic spine) [illegible]

[illegible] ΔFosB [illegible] ΔFosB [illegible] (spine density), [illegible] (receptor) [illegible] (chromatin accessibility) [illegible] ΔFosB [illegible]

[illegible] relapse [illegible] исследований [illegible] "drug-primed reinstatement" [illegible] "[illegible]" [illegible]

> **ΔFosB** [illegible]

11. [illegible]

[illegible] ([illegible]; [illegible] [illegible]-[illegible] [illegible])

ΔFosB [illegible] AP-1 transcription factor complex (JunD [illegible]) [illegible] cellular senescence [illegible]

- [illegible] ([illegible]) [illegible] "[illegible]" (stress-induced premature senescence - SIPS) [illegible] ΔFosB [illegible] (EGR3) [illegible] DNA [illegible] (GADD45B/G) [illegible] p21 (CDKN1A) [illegible] synaptic plasticity [illegible] hippocampus [illegible]
- [illegible]—[illegible]— [illegible] AP-1 [illegible] Senescence-Associated Secretory Phenotype (SASP) [illegible] SASP [illegible] (CRF, [illegible]) [illegible]
- [illegible] - [illegible] ΔFosB [illegible] metabolic [illegible] ([illegible])[illegible] Alzheimer's-model [illegible] hippocampus [illegible]

ΔFosB [illegible]

[illegible]

12. [illegible] - [illegible]

- [illegible] cessation—[illegible]

[[illegible]] [illegible] voluntary [illegible] επίσης [illegible] (nucleus accumbens) [illegible] ΔFosB [illegible] resilience ([illegible]) [illegible] ίδια [illegible] (protein) [illegible]

- [illegible] - [illegible] ([illegible])
- [illegible] - [illegible] HPA [illegible] ΔFosB [illegible] ΔFosB [illegible]
- [illegible]

[illegible]

ΔFosB [illegible] ΔFosB [illegible] ΔFosB [illegible] Recovery Kernel [illegible] ΔFosB [illegible]

[illegible]: [illegible]

[illegible] [illegible] (Ctrl — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible])